

## WHAT IS CLAIMED:

1        1. A multiple layer composite for indicating the pH  
2 of a fluid environment comprising a first layer  
3 containing a pH indicating agent for responding to the  
4 fluid in the environment and a second layer disposed  
5 between said first layer and said environment to control  
6 fluid contact with said first layer.

1        2. A composite as in claim 1, wherein said first  
2 and second layers are selected from the group consisting  
3 of polymer layers, ink layers, fibrous layers and  
4 combinations thereof.

1        3. A composite as in claim 2, wherein said second  
2 layer is a fluid barrier layer that is permeable or  
3 impermeable to said fluid.

1        4. A composite as in claim 2, wherein one or both  
2 of said first and second layers includes a matrix  
3 containing a fluid regulating means.

1        5. A composite as in claim 4, wherein said fluid  
2 regulating means comprises a fluid regulating additive  
3 dispersed in said matrix.

1        6. A composite as in claim 5, wherein said matrix  
2 comprises a polymer.

1        7. A composite as in claim 6, wherein said fluid  
2 regulating additive is selected from the group consisting  
3 of silica gel, superabsorbent polymers, cellulosic

4 resins, anhydride resins, polyolefin blend resins,  
5 zeolites, calcium oxide, clays and calcium sulfate.

1 8. A composite as in claim 5, wherein said matrix  
2 comprises a layer of printed ink having said fluid  
3 regulating additive dispersed therein.

1 9. A composite as in claim 8, wherein said layer of  
2 printed ink is formed with a pH indicating ink.

1 10. A composite as in claim 8, wherein said first  
2 layer is a printed ink layer.

1 11. A composite as in claim 3, wherein said fluid  
2 barrier layer is a microporous fluid dispersion layer.

1 12. A composite as in claim 11, wherein said fluid  
2 barrier layer is a polymer layer having a moisture vapor  
3 transmission rate selected to restrict fluid contact of  
4 said first layer below a threshold amount of fluid in  
5 said environment.

1 13. A composite as in claim 3, wherein said fluid  
2 barrier layer is a fibrous layer formed of fibers having  
3 surfaces coated with a moisture transmitting component.

1 14. A composite as in claim 2, wherein said fibers  
2 are hollow fibers.

1 15. A composite as in claim 2, wherein said  
2 composite includes coaxial fibers having inner and outer  
3 layers that provide said first and second layers.

1        16. A composite as in claim 1, wherein said pH  
2        indicating agent provides different responses to fluid  
3        contact at different locations within said composite.

1        17. A composite as in claim 1, wherein said pH  
2        indicating agent has different concentrations at  
3        different locations within said thickness and said  
4        different responses are color or contrast or intensity  
5        variations.

1        18. A composite as in claim 1, wherein said  
2        composite includes a second pH indicating agent and said  
3        pH indicating agents provide different responses at  
4        different locations within said thickness.

1        19. A composite as in claim 1, wherein said pH  
2        indicating agent is selected from the group consisting of  
3        cresol red, thymol blue, methyl yellow, methyl orange,  
4        bromophenol blue, bromocresol green, methyl red, p-  
5        Nitrophenol, phenol red, thymol blue, phenophthalein,  
6        Alizarin yellow R and mixtures thereof.

1        20. A composite as in claim 1, wherein said  
2        composite is part of an absorbent article worn on a  
3        user's body.

1        21. A composite as in claim 1, wherein said  
2        composite is part of a fabric softener sheet.

1        22. A composite as in claim 1, in combination with  
2        a drying device having a window for viewing the  
3        composite.

1        23. A composite as in claim 1, wherein said second  
2 layer reduces bleed of said pH indicating agent into said  
3 fluid.

1        24. A wetness indicator comprising a layer selected  
2 from the group consisting of a polymer layer, an ink  
3 layer, a fibrous layer and combinations thereof, said  
4 layer comprising a matrix containing a pH indicating  
5 agent and a fluid regulating additive.

1        25. An indicator as in claim 24, wherein said  
2 matrix has a thickness and at least one surface to be  
3 exposed to a fluid environment to be monitored by said pH  
4 indicating agent, and said pH indicating agent and said  
5 fluid regulating additive are dispersed through the  
6 thickness of said matrix whereby fluid contacting the  
7 surface is transmitted by said fluid regulating additive  
8 into contact with said pH indicating agent within the  
9 thickness of said matrix.

1        26. An indicator as in claim 25, wherein said fluid  
2 penetrates said thickness of said matrix to an extent  
3 that is proportional to the concentration of fluid in  
4 said environment.

1        27. An indicator as in claim 26, wherein said pH  
2 indicating agent provides different responses to fluid  
3 contact at different locations within said thickness of  
4 said matrix.

1        28. An indicator as in claim 27, wherein said pH  
2 indicating agent has different concentrations at  
3 different locations within said thickness and said

4 different responses are color or contrast or intensity  
5 variations.

1 29. An indicator as in claim 28, wherein said  
2 indicator includes a second pH indicating agent and said  
3 pH indicating agents provide different color responses at  
4 different locations within said thickness.

1 30. An indicator as in claim 24, wherein said fluid  
2 regulating additive is selected from the group consisting  
3 of silica gel, superabsorbent polymers, cellulosic  
4 resins, anhydride resins, polyolefin blend resins,  
5 zeolites, calcium oxide, clays and calcium sulfate.

1 31. An indicator as in claim 24, wherein said  
2 composite is part of an absorbent article worn on a  
3 user's body.

1 32. An indicator as in claim 24, wherein said  
2 composite is a fabric softener sheet.

33. An indicator as in claim 24, in combination  
with a drying device having a window for viewing the  
composite.

1 34. An indicator as in claim 24, wherein said fluid  
2 regulating additive provides a pathway into said matrix  
3 for fluid contact with said pH indicating agent within  
4 said matrix whereby less pH indicating agent is required  
5 for the same response and less bleed of the agent occurs  
6 as compared with an otherwise identical matrix not having  
7 said pathway and providing the same response.

1        35. A wetness indicator comprising a multiple layer  
2 composite of a first ink layer and a second ink layer, at  
3 least one of said layers including a fluid regulating  
4 additive and at least one of said layers including a pH  
5 indicating agent.

1        36. An indicator as in claim 35, wherein said pH  
2 indicating ink layers contain a fluid regulating additive  
3 selected from the group consisting of silica gel,  
4 superabsorbent polymers, cellulosic resins, anhydride  
5 resins, polyolefin blend resins, zeolites, calcium oxide,  
6 clays and calcium sulfate.

1        37. An indicator as in claim 36, wherein said one  
2 layer provides a polymer matrix containing said pH  
3 indicating agent and said fluid regulating additive.

1        38. An indicator as in claim 37, wherein said  
2 polymer matrix has a thickness and at least one surface  
3 to be exposed to an environment containing a fluid  
4 providing the environment with a finite pH to be  
5 monitored by said pH indicating agent, and said pH  
6 indicating agent and said fluid regulating additive are  
7 dispersed through the thickness of said matrix whereby  
8 fluid contacting the surface is transmitted by said fluid  
9 regulating additive into contact with said pH indicating  
10 agent within the thickness of said matrix.

1        39. An indicator as in claim 38, wherein said fluid  
2 penetrates said thickness of said matrix to an extent  
3 that is proportional to the concentration of fluid in  
4 said environment.

1        40. An indicator as in claim 39, wherein said pH  
2        indicating agents provide different responses to fluid  
3        contact at different locations within said thickness of  
4        said matrix.

1        41. An indicator as in claim 40, wherein said pH  
2        indicating agent has different concentrations at  
3        different locations within said thickness and said  
4        different responses are color signal intensity  
5        variations.

1        42. An indicator as in claim 41, wherein said  
2        indicator includes a second pH indicating agent and said  
3        pH indicating agents provide different color responses at  
4        different locations within said thickness.

1        43. An indicator as in claim 41, wherein said  
2        composite is part of an absorbent article worn on a  
3        user's body.

1        44. An indicator as in claim 37, wherein said  
2        composite is a fabric softener sheet.

1        45. An indicator as in claim 37, in combination  
2        with a drying device having a window for viewing the  
3        composite.

1        46. An indicator as in claim 35, wherein said one of  
2        said layers reduces bleed of said pH indicating agent  
3        into said fluid.

1        47. A wetness indicating ink comprising a polymer,  
2        a pH indicating agent and a fluid regulating additive in

3 an amount effective to provide a cured or dried layer of  
4 said ink having said additive dispersed therein with  
5 sufficient moisture transmission to cause a fluid  
6 contacting said layer to be transmitted into contact with  
7 said pH indicating agent within said layer.

1 48. An ink as in claim 47, wherein said ink is a  
2 solvent ink containing a solvent soluble or solvent  
3 dispersible fluid regulating additive.

1 49. An ink as in claim 48, wherein said ink is a  
2 radiation curable ink containing a dispersible fluid  
3 regulating additive.

1 50. An ink as in claim 47, wherein said fluid  
2 regulating additive is selected from the group consisting  
3 of silica gel, superabsorbent polymers, cellulosic  
4 resins, anhydride resins, polyolefin blend resins,  
5 zeolites, calcium oxide, clays and calcium sulfate.